

about 12 mm. long, the limb about 8 mm. wide.

The type of this species was collected by C. Marticorena and O. Matthei (no. 315) at Arqueros, Coquimbo, Chile, on October 16, 1963, and is deposited in my personal herbarium at Plainfield, New Jersey.

MATERIALS TOWARD A MONOGRAPH OF THE GENUS LIPPIA. VIII

Harold N. Moldenke

LIPPIA SCAPOSA Briq.

Additional bibliography: Moldenke, *Phytologia* 12: 462--464. 1965.

In all, 8 herbarium specimens, including type material, and 4 mounted photographs have been examined by me.

Citations: PARAGUAY: Hassler 6965 [Macbride photos 17542] (Ca-944349--isotype, It--photo of isotype, Kr--photo of isotype, Mi--isotype, N--isotype, N--isotype, N--photo of isotype, S--isotype, W--photo of isotype); Jorgensen 4583 [Herb. Osten 22251] (Du--206337, N, Ug).

LIPPIA SCAPOSA var. MELANOCAULOS Briq. in Chod. & Hassler, *Bull. Herb. Boiss.*, sér. 2, 4: 1163. 1903.

Bibliography: Briq. in Chod. & Hassler, *Bull. Herb. Boiss.*, sér. 2, 4: 1163. 1904; Briq. in Chod. & Hassler, *Pl. Hassler*. 2 (11): 499. 1904; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 1], 41 & 96 (1942) and [ed. 2], 99 & 191. 1949; Moldenke, *Résumé* 117 & 462. 1959; Troncoso, *Darwiniana* 12: 289. 1961.

This variety differs from the typical form of the species in having black (instead of green) stems, which are apparently more fistulose above, and the bractlets sometimes broader, large and ovate.

The type of the variety was collected by Emil Hassler (no. 6965a) in the region of the upper course of the Río Y-acá, Paraguay, in January, 1900, and is deposited in the Delessert Herbarium at the Conservatoire et Jardin Botaniques at Geneva. Troncoso (1961) is of the opinion -- without having seen any material -- that this probably represents the pistillate form of L. scaposa Briq., rather than a distinct variety. I have seen no material, either, and know nothing of the taxon except what is stated in the literature.

LIPPIA SCHAUERIANA Mart. ex Schau. in A. DC., *Prodr.* 11: 590. 1847.

Bibliography: Schau. in A. DC., *Prodr.* 11: 590. 1847; Schau. in Mart., *Fl. Bras.* 9: 246. 1851; Jacks. in Hook. f. & Jacks., *Ind. Kew.* 2: 96. 1894; Moldenke, *Known Geogr. Distrib. Verbenac.*,

[ed. 1], 37 & 96. 1942; H. N. & A. L. Moldenke, *Pl. Life* 2: 81. 1948; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 81 & 191. 1949; Moldenke, *Alph. List Cit.* 3: 710. 1949; Moldenke, *Phytologia* 3: 287. 1950; Moldenke, *Résumé* 94 & 462. 1959; Moldenke, *Phytologia* 12: 24. 1965.

Shrubby, branched; branches tetragonal, glandular-scabrid; leaves decussate-opposite or approximate, patulous, petiolate; petioles glandular-scabrid; leaf-blades broadly ovate, about 2.5 cm. long, about 1.8 cm. wide near the base, acute at the apex, serrate and subrevolute along the margins, subferruginous (perhaps only in drying) beneath, rough and shiny above, paler beneath, very slightly pubescent and glandular-pulverulent beneath, 3-veined, the midrib pinnately branched, venose; heads very short-pedunculate, finally subspicate, solitary in the leaf-axils, rather corymbose at the apex of the branchlets; bractlets herbaceous, ovate-elliptic, obtuse at the apex, 3-veined, glandular-pubescent; calyx bifid, villous, the lobes obtuse at the apex; corolla hypocrateriform, white or pale-rose, its tube 6 mm. long, cylindrical, somewhat gradually ampliate above and puberulous there, the limb somewhat broader, thin, undulate.

The type of this apparently rare species was collected by Carl Friedrich Philipp von Martius (no. 243) in pastures along the Rio São Francisco between Bom Jardim and Cruz de Valerio, Pernambuco, Brazil, flowering in April, deposited in the herbarium of the Botanical Museum at Munich, where it was photographed by Macbride as his type photograph number 20334. It is named in honor of Johann Conrad Schauer, who monographed the Verbenaceae over a hundred years ago. Schauer (1847) places the species in his Section Zapania, Subsection Corymbosae. In all, 2 herbarium specimens and 4 mounted photographs have been examined by me.

Citations: BRAZIL: Bahia: Löfgren 941 [Herb. Rio de Janeiro 46787] (Ja, N). Pernambuco: Martius 243 [Macbride photos 20334] (It—photo of type, Kr—photo of type, N—photo of type, W—photo of type).

LIPPIA SCHLECHTENDALII Moldenke, *Phytologia* 2: 53. 1941.

Synonymy: Dipterocalyx scaberrima Schlecht., *Linnaea* 26: 647. 1853 [not Lippia scaberrima Sond., 1850].

Bibliography: Sond., *Linnaea* 23: 87. 1850; Schlecht., *Linnaea* 26: 647. 1853; Moldenke, *Phytologia* 2: 53. 1941; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 1], 32 & 96. 1942; Moldenke, *Alph. List Invalid Names* 23. 1942; H. N. & A. L. Moldenke, *Pl. Life* 2: 81. 1948; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 63 & 191. 1949; E. J. Salish., *Ind. Kew. Suppl.* 11: 138. 1953; Moldenke, *Résumé* 71, 278, & 462. 1959; Moldenke, *Résumé Suppl.* 12: 3. 1965.

Small shrub, 2.6--3.3 m. tall, very rough throughout; petioles about 2.5 cm. long; leaf-blades ovate, long-acuminate at the apex, densely crenulate-serrate along the margins, rather acute at the base, densely rugose above, softer beneath, the entire vein reticulation pilose-hirtous and prominulous beneath, the midrib rarely

also hirtous above; inflorescence axillary, whorled, pedunculate, forming a rather broad terminal panicle; heads 6 mm. wide; bractlets imbricate in many ranks, narrowly obovate-rounded, small, very obtuse and white-hispid at the apex; calyx compressed, slightly over 2 mm. long, bicarinate, with 2 compressed teeth on the margin of the keel-prolongations about a third the length of the calyx, long-pilose with white hairs; corolla white, the tube slightly less than 2 mm. long, gradually ampliate upwards, equaling the calyx-teeth, the limb hirtous on the outer surface; style very short, somewhat thicker and bilobed at the apex, persistent on the fruit; fruit black, broadly ovate, smooth, glabrous, easily separable, compressed, the sides convex, with a longitudinal sulcation, the margin obtuse, terminating in a minute apiculation which is the persistent style.

The type of this puzzling species was collected by Wagener (no. 426) in dry places at Chacaito, near Caracas, Federal District, Venezuela [as "Colombia" in the original description], at an altitude of 4000 feet, flowering and fruiting in November. It is named in honor of Diederich Franz Leonhard von Schlechtendal, German botanist of distinction, professor of botany and director of the botanical garden at Halle, author with Chamisso of many important botanical papers. He says "Dipterocalyx genus olim a Chamissone constitutum a beato Schauero cum Lippia conjunctum, nostra sententia restituendum."

Nothing is known to me about this plant except what is given about it in the original description.

LIPPIA SCHLIEBENI Moldenke, *Phytologia* 2: 316--317. 1947.

Synonymy: Lantana schliebeni Moldenke, *Résumé* 307, in syn. 1959.

Bibliography: Moldenke, *Phytologia* 2: 316--317 & 341. 1947; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 117, 118, & 191. 1949; Moldenke, *Alph. List Cit.* 3: 723, 815, & 903 (1949) and 4: 1046, 1060, & 1248. 1949; Moldenke, *Phytologia* 3: 456. 1951; E. J. Salisb., *Ind. Kew. Suppl.* 11: 138. 1953; Moldenke, *Résumé* 142, 145, 146, 307, 418, & 462. 1959.

Dense bush or much-branched shrub or subshrub, 1--3 m. tall; stems and branches gray, obtusely tetragonal, scabrellous; twigs tetragonal, short-pubescent or puberulent, brownish; nodes not annulate; leaf-scars elevated, corky; principal internodes 2--15 mm. long on twigs, to 5 cm. long on the main stem; leaves decussate-opposite, numerous, aromatic with a strong scent of camphor when crushed; petioles slender, 1--6 mm. long, densely puberulent; leaf-blades chartaceous, bright-green above, lighter beneath, ovate, 1.5--3 cm. long, 5--15 mm. wide, acute at the apex, densely serrulate along the margins, acuminate at the base, scabrous and bullate above, appressed canescent-puberulous beneath; midrib slender, deeply impressed above, prominulent beneath; secondaries slender, 3--5 per side, ascending, not much arcuate, deeply impressed above, prominulent beneath; vein and veinlet reticulation beautifully conspicuous and deeply impressed above, prominulent

beneath; inflorescence axillary, abundant, spicate, 2 per node; peduncles slender, 2--6 cm. long, densely puberulent, glabrescent in age; spikes subcapitate during anthesis, elongate to 2 cm. in fruit, densely many-flowered; bractlets ovate, numerous, reflexed during anthesis, about 5 mm. long and 3 mm. wide, attenuate at the apex, densely puberulent on both surfaces; flowers very fragrant; corolla hypocrateriform, white or whitish-yellow to yellowish-white, bluish, or rose-color, surpassing the subtending bractlet by about 3 mm., densely pubescent on the outer surface, its limb about 3 mm. wide; fruit dry, lilac.

The type of this species was collected by H. J. Schlieben (no. 5596) -- in whose honor it was named -- at Mucra Plateau, Bakari, 80 km. west of Lindi, at an altitude of 600 m., Tanganyika, on October 26, 1934, and is deposited in the herbarium of the Jardin Botanique de l'Etat at Brussels. The species has been found in fields, hedges, bush grasslands, and on dry grassy hillsides, at altitudes of 560 to 2665 meters, flowering from December to August and in October, in fruit in February, March, and July. A vernacular name recorded for it is "igahia". Schlieben calls it "very common", while Greenway says that it is "locally dominant in Vernonia-Clerodendrum bush formation in abandoned Manihot rubber plantations".

The flowers are described as "white" on Dümmer 5142, Fries & Fries 159, Graham 2141, Greenway 3116, and A. Peter 31336, 41351, & 43365; "whitish-yellow" on Fries & Fries 443 and Schlieben 4548; "yellowish-white" on A. Peter 42581; and "white, bluish, or rose-color" on A. Peter 4031. The fruit (!) is described as "lilac" in color on A. Peter 39075. The leaves are especially scabrous on A. Peter 1496, 2056, 2119b, 8562, 31336, 42452, 42581, 42861, 43360, & 43365.

Material has been misidentified and distributed in herbaria under the names L. adoensis Hochst., L. asperifolia Rich., L. plicata J. G. Baker, L. ukambensis Vatke, L. viburnoides Vahl, and Lantana salviifolia Jacq.

The species seems superficially, at least, to resemble greatly Lantana scabrifolia Moldenke, and I am not convinced that these two taxa are distinct. More material is needed to clarify this question.

In all, 42 herbarium specimens, including the types of both names involved, and 4 mounted photographs have been examined by me.

Citations: CONGO LEOPOLDVILLE: Quarré 3448 (Br, Br, Br, Br, Br, N). TANGANYIKA: P. J. Greenway 3116 (K); Grote s.n. [2.I. 1913; A. Peter 51812] (B); A. Peter 497 [0.I.18] (B), 1496 [0.I. 37] (B), 2056 [0.I.53] (B, B), 2119b [0.I.54] (B), 4031 [0.I.119] (B), 4263a [0.I.128] (B), 8562 [0.III.43] (B), 11244 [I.III.121] (B), 16430 [0.IV.46] (B), 17145a [0.IV.76.I] (B), 31336 [V.47] (B), 39075 [V.191] (B), 41351 [V.263] (B), 42452 [V.287] (B), 42581 [V.292] (B), 42861 [V.299] (B, B), 43360 [V.306] (B), 43365

[V.306] (B); Schlieben 4548 (S), 5596 (Br--type, K--photo of type, N--isotype, N--photo of type, Si--photo of type, Z--photo of type). KENYA: Dummer 5142 (K, W--1094572); Fries & Fries 159 (K, N, S), 443 (N, S); M. D. Graham 2141 (K); Mearns 1838 (W--631790); Napier 2486 (K); Piemeisel & Kephart 186 (W--1373248).

LIPPIA SCHLIMII Turcz., Bull. Soc. Nat. Mosc. 36 (2): 204. 1863.

Synonymy: Lippia schlimi Turcz. ex Moldenke, Résumé Suppl. 12: 11, in syn. 1965.

Bibliography: Turcz., Bull. Soc. Nat. Mosc. 36 (2): 204. 1863; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 96. 1894; Moldenke, Suppl. List Invalid Names 5. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 31 & 96. 1942; Moldenke, Alph. List Invalid Names 30. 1942; Moldenke, Bot. Gaz. 106: 162. 1944; Moldenke, Alph. List Cit. 1: 135 (1946) and 2: 611. 1948; H. N. & A. L. Moldenke, Pl. Life 2: 81. 1948; Moldenke, Alph. List Cit. 3: 693, 806, & 903 (1949) and 4: 1077 & 1078. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 60 & 191. 1949; Moldenke, Résumé 67, 312, & 462. 1959; Moldenke, Résumé Suppl. 11: 4, 5, & 7 (1964) and 12: 2, 3, 10, & 11. 1965; Moldenke, Phytologia 12: 207 & 292. 1965; Moldenke, Biol. Abstr. 46: 3616. 1965.

Shrubby; stems tetragonal, scabrous above with short hairs; leaves decussate-opposite, petiolate; petioles scabrous with short hairs; leaf-blades broadly lanceolate or ovate-lanceolate, acute or acuminate at the apex, crenate along the margins from about the middle to the apex, acute at the base, rugose-bullate and scabrous above, rather densely pubescent beneath; panicle terminal, many times trichotomous; heads mostly ternate, ovate, shorter than the peduncles; bractlets subsquarrose, acute at the apex; calyx densely ciliate on the back.

The type of this species was collected by Louis Joseph Schlim (no. 97) at Ocaña, Norte de Santander, Colombia at an altitude of 4000 feet. An isotype in the Delessert Herbarium at the Conservatoire et Jardin Botaniques at Geneva was photographed by Macbride as his type photograph number 24666. Turczaninow (1863) says "Capitulis etiamsi parva, tamen majora quam in praecedente [L. pauciserrata Turcz. = L. americana L.], pisi minoris magnitudine, minus squarrosa" and places the species in Section Zapania.

In several of my previous publications I regarded L. floribunda Briq. as a synonym of L. schlimii, with the same type, but this is incorrect. Briquet's name is based on Fendler 863 from Aragua, Venezuela, and belongs in the synonymy of L. moritzii Turcz. The Killip & Smith 19228 & 20285 and F. W. Pennell 8891, distributed as L. schlimii, are actually var. glabrescens (Moldenke) Moldenke.

In all, 5 herbarium specimens, including type material of all the names involved, and 4 mounted photographs have been examined by me.

Citations: COLOMBIA: Norte de Santander: Cuatrecasas, Schultes,

& Smith 12368 (W--1850956), 12381 (W--1850963), 12823 (W--1851035); Schlim 97 [Macbride photos 24666] (It--photo of type, Kr--photo of type, N--isotype, N--photo of isotype, W--photo of isotype). Santander: Killip & Smith 17053 (N).

LIPPIA SCHLIMII var. GLABRESCENS (Moldenke) Moldenke, Phytologia 10: 489. 1964.

Synonymy: Lippia venezuelana Briq., Ann. Conserv. & Jard. Bot. Genève. 4: 234. 1900. Lippia venezolana Briq. apud H. Pittier, Cat. Fl. Venez. 2: 333, sphalm. 1947. Lippia hirsuta var. glabrescens Moldenke, Phytologia 9: 500. 1964. Lippia venezuelensis Briq. ex Moldenke, Résumé Suppl. 12: 11, in syn. 1965 [not L. venezuelensis Moldenke, 1939].

Bibliography: Briq., Ann. Conserv. & Jard. Bot. Genève. 4: 234 & 238. 1900; K. Schum. in Just, Bot. Jahresber. 28 (1): 497. 1902; Thiselt.-Dyer, Ind. Kew. Suppl. 2: 106. 1904; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 32 & 96. 1942; Moldenke, Alph. List Cit. 1: 230. 1946; W. H. Hodge, Revist. Fac. Nat. Agron. 7: 313. 1947; Daniel, Verb. Cent. Antioq. 4. 1947; Moldenke, Alph. List Cit. 3: 663 & 693. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 63 & 191. 1949; Moldenke, Bol. Soc. Venez. Cienc. Nat. 11: 289. 1950; Moldenke, Résumé 71, 318, & 463. 1959; Moldenke, Biol. Abstr. 45: 7026. 1964; Moldenke, Résumé Suppl. 11: 4, 5, & 7. 1964; Moldenke, Phytologia 9: 500 (1964), 10: 489 (1964), and 12: 207, 208, & 292. 1965; Moldenke, Biol. Abstr. 46: 3616. 1965; Moldenke, Résumé Suppl. 12: 2, 3, 10, & 11. 1965.

This variety differs from the typical form of the species in having its leaf-blades glabrous, subglabrous, or glabrescent beneath.

The type of the variety was collected by Ellsworth Paine Killip, Fred Alexander Barkley, and Brother Julián González Daniel (no. 39841) at the edge of a woods along the road from Medellín to Rionegro, at an altitude of 2000 meters, Antioquia, Colombia, on November 17, 1948, and is deposited in the Britton Herbarium at the New York Botanical Garden. The type of L. venezuelana was collected by Jean Jules Linden (no. 341) in the states of Trujillo and/or Mérida, Venezuela, in 1842, and is deposited in the Delesert Herbarium at the Conservatoire et Jardin Botaniques at Geneva, where it was photographed by Macbride as his type photograph number 24677. The original label is inscribed "Hautes Andes de Truxillo & de Merida. Depuis 4000 jusqu'à 14,500 pieds de hauteur (1842)."

The plant is described by collectors as a shrub or tree, 3--16.5 m. tall, with spreading top, and good hard wood; leaves firmly membranous or membranous-chartaceous, pleasantly scented, deep-green above, dull-green beneath and with raised buff venation beneath; bracts and peduncles dull pale-green; flowers small; and corolla white or greenish-white.

The plant has been collected in woods and forests, thickets,

and rich woods near and bordering quebradas, on open hillsides, and at the edge of forests, at altitudes of 1700 to 3000 meters, flowering from November to March, as well as in June, July, and September, fruiting from January to March, June, July, and September. Steyermark refers to it as "common" in Táchira, while Gehriger found it in "pedregal y quebradas muy pendientes" in Mérida. Vernacular names reported for it are "gallinazo" and "salvia".

Daniel (1947) says "Otra forma semejante es Lippia venezuelana Briq. Arbusto también; sólo que el color grisáceo no aparece tan acentuado y las hojas son un poco más estrechas. También se le ve con cierta frecuencia." The L. venezuelensis Moldenke is a synonym of L. moritzii Turcz.

Material has been misidentified and distributed in herbaria under the names L. floribunda H.B.K., L. hirsuta L., L. hirsuta L. f., L. myriocephala Schlecht. & Cham., L. schlimii Turcz., and Hyptis sp. All the specimens cited by Hodge (1947) as L. hirsuta are actually L. schlimii var. glabrescens; his "Arcehr 267" is a typographic error for Archer 267.

In all, 32 herbarium specimens and 4 mounted photographs, including type or phototype material of all the names involved, have been examined by me.

Citations: COLOMBIA: Antioquia: Archer 267 (W--1541831), 1110 (W--1542347); Gutiérrez Villegas 1093 (N); Killip, Barkley, & Daniel 39841 (N--type); F. C. Lehmann 3137 (W--1323009); Toro 865 (N), 1281 (N). Caldas: F. W. Pennell 8891 (N, W--1142721), 8922 (N, W--1142729). Cauca: F. C. Lehmann 898 (W--939639); H. Pittier 1141 (W--531637); Triana 3684 (W--11481366). Cundinamarca: Triana 2043 (W--11481364). Norte de Santander: Killip & Smith 20285 (N). Santander: Killip & Smith 16982 (N, W--1352650), 19228 (N). Valle del Cauca: Cuatrecasas 20471 (F--1367447, N). VENEZUELA: Mérida: Gehriger 337 (N, N, Ve, W--1541246). Táchira: Steyermark 57271 (F--1205143, N, Ve--27292), 57469 (F--1205614, N, Ve--25271). Trujillo: Linden 341 [Macbride photos 24677] (It--photo, Kr--photo, N--photo, W--photo). CULTIVATED: Colombia: W. H. Hodge 6744 (N).

LIPPIA SCHOMBURGKIANA Schau. in A. DC., Prodr. 11: 577. 1847.

Synonymy: Lippia microphylla Benth. apud Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 95, in syn. 1894 [not L. microphylla Cham., 1832, nor R. A. Phil., 1865]. Lippia schomburgkiana Schum. ex Moldenke, Résumé Suppl. 3: 33, in syn. 1962.

Bibliography: Benth. in Hook., Journ. Bot. 2: 52. 1840; Schau. in A. DC., Prodr. 11: 577. 1847; Schau. in Mart., Fl. Bras. 9: 227. 1881; Bocq., Adansonia 3: 244. 1863; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 95 & 96. 1894; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 33, 38, & 96. 1942; Moldenke, Alph. List Cit. 1: 223. 1946; H. N. & A. L. Moldenke, Pl. Life 2: 82.

1948; Moldenke, *Castanea* 13: 116--117. 1948; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 66, 81, & 191. 1949; Moldenke, *Alph. List Cit.* 3: 669, 689, 759, 905, 906, & 945. 1949; Moldenke, *Bol. Soc. Venez. Cienc. Nat.* 11: 289. 1950; Moldenke, *Phytologia* 4: 187. 1953; Moldenke, *Résumé* 75, 94, & 462. 1959; Moldenke, *Résumé Suppl.* 2: 9 (1960), 3: 33 (1962), 10: 2 (1964), and 11: 4. 1964; Moldenke, *Phytologia* 12: 23, 47, 170, 288, & 289. 1965.

Shrub, to 1.3 m. tall, erect, aromatic; stems brown, white-pilose; branches strict, short-twiggy; twigs sericeous-hirsutulous; leaves small, decussate-opposite, lavender-scented when crushed, short-petiolate; leaf-blades fairly dark-green, ovate-oblong, obtuse at the apex, crenulate along the margins, pinnately veined, plicate-rugose and more or less bullate above, holo-sericeous-tomentose above, white-hirtellous beneath, canescent; peduncles mostly paired in each leaf-axil, half as long as the subtending leaf; heads spicate, tetraquetrous-ovoid or oblong and distinctly 4-angled; bractlets pale-green, ovate, imbricate, acuminate at the apex with a folded-patulous acumen, half as long as the corolla-tube, the entire margin and keel white-villosulous from the first; flowers scented; corolla small, hypocrateriform, white or yellowish-white to pink, sometimes creamy-white with a yellow throat, about 3 mm. long, the upper and the very small lateral lobes of the limb reflexed, the lower lobe linear-oblong, extended forward, and truncate.

The type of this species was collected by Sir Robert Herman Schomburgk (no. 404) -- in whose honor it was named -- in British Guiana, and was deposited in the herbarium of the Botanisches Museum at Berlin, where it was photographed by Macbride as his type photograph number 17543, but is now destroyed. Schauer (1847) classifies the species in her Section Goniostachyum and says that it is closely related to L. glandulosa Schau. It has likewise been compared with L. alba (Mill.) N. E. Br., but may be distinguished at once from that species by its oblong and distinctly 4-angled spikes, which are mostly paired in each leaf-axil, its much smaller bractlets and flowers, and its smaller more or less bullate leaves. Jackson (1894) lists a "Lippia microphylla Benth. in Hook., *Journ. Bot.* 2: 52. 1840" as a synonym of L. schomburgkiana, but Bentham in that reference clearly refers the binomial back to Cham., *Linnaea* 7: 226 (1832) and is certainly not intentionally proposing a homonym. Philippi's homonym is a synonym of Acantholippia deserticola (F. Phil.) Moldenke.

The species has been found on savannas, open savannas, campos, open grasslands, dry clay of rolling savannas, and caatinga, at altitudes of 3500 to 3600 feet, flowering from April to June, August, and October. Irwin reports it as "occasional" in fine brown sand on savannas. The only vernacular name recorded for it is "cidreira brava". The corollas are described as "white" on A. C. Smith 2193, "yellowish-white" on Irwin 402, "creamy-white with a yellow throat" on S. G. Harrison 1397, and "pink" on Irwin 728.

Material has been misidentified and distributed in herbaria as L. elegans Cham. and L. gracilis Schau.

In all, 32 herbarium specimens and 5 mounted photographs, including phototypes of the accepted name, have been examined by me.

Citations: VENEZUELA: Bolívar: Irwin 402 (W--2197626). BRITISH GUIANA: Forest Dept. Br. Guian. WB.79 (N, Wb); S. G. Harrison 1315 (N), 1397 (N); Irwin 549 (W--2212584), 728 (Au--165638); Jenman 52 (W--303498), 5501 (C, W--72937, W--1322977, W--1473158), 5644 (C, N); J. G. Myers 5535 (K); Rob. Schomburgk 75 (Br, Br, W--41336), 404 [Macbride photos 17543] (It--photo of type, Kr--photo of type, N--photo of type, N--photo of type, W--photo of type); A. C. Smith 2193 (N, S, W--1777570). BRAZIL: Brasilia: Murça Pires, Silva, & Souza 9095 (Z). Ceará: G. Gardner 1819 [Herb. Reichenb. f. 200257] (V, V); Guedes 447 (N, N); Löfgren 586 (S). Goiás: G. Gardner 4332 (V); Macedo 3639 (S, W--2059767). Pará: Frões 29790 (Be--79757). Rio Branco: Black 51-12548 (N).

LIPPIA SCLEROPHYLLA Briq. in Chod. & Hassler, Bull. Herb. Boiss., sér. 2, 4: 1067--1068. 1904.

Synonymy: Lippia sclerophylla var. crenato-dentata Briq. in Cod. & Hassler, Bull. Herb. Boiss., sér. 2, 4: 1068. 1904. Lippia sclerophylla var. subintegra Briq. in Chod. & Hassler, Bull. Herb. Boiss., sér. 2, 4: 1068. 1904. Lippia xerophylla Briq. ex Moldenke, List Invalid Names Suppl. 1: 16, in syn. 1947. Lippia sclerophylla var. sclerophylla [Troncoso], Darwiniana 12: 266, in nota. 1961.

Bibliography: Briq. in Chod. & Hassler, Bull. Herb. Boiss., sér. 2, 4: 1067--1068 & 1162. 1904; Briq. in Chod. & Hassler, Pl. Hassler. 2 (10): 489--490. 1904; Prain, Ind. Kew. Suppl. 3: 104. 1908; Molfino, Not. Bot. 2: 103. 1923; Moldenke, Lilloa 4: 428 (1940) and 8: 425--426. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 41, 43, & 96. 1942; Moldenke, Alph. List Invalid Names 32. 1942; Moldenke, Lilloa 10: 380. 1944; Moldenke, Alph. List Cit. 1: 249 & 264. 1946; Moldenke, Alph. List Invalid Names Suppl. 1: 16. 1947; Moldenke, Phytologia 2: 386. 1947; Moldenke, Lilloa 14: 46. 1948; Moldenke, Alph. List Cit. 2: 441 & 600 (1948), 3: 660, 693, 747, & 862 (1949), and 4: 1165, 1238, 1256, & 1257. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 99, 105, & 191. 1949; Moldenke, Résumé 117, 126, 317, 318, & 462. 1959; Troncoso, Darwiniana 12: 257 & 263--266, fig. 3 & 4. 1961; Moldenke, Phytologia 12: 24, 199, & 211. 1965; Moldenke, Résumé Suppl. 12: 11. 1965.

Illustrations: Troncoso, Darwiniana 12: 264 & 265, fig. 3 & 4. 1961.

Herb or subshrub, 0.5--2 m. tall, with mint odor; stems strict, furfuraceous with more or less antrorse strigose hairs; branches numerous, erect or ascending; internodes often shorter than the leaves; leaves ternate, sessile; leaf-blades ovate-elliptic or elliptic, 3.5--5.5 cm. long, 1.5--2.5 cm. wide, rath-

er shortly acute at the apex, regularly convex or sometimes recurved along the margins, varying from abundantly crenate-dentate to subentire or entire, rounded or rounded-attenuate at the base, rather shiny above, green and very rough above, sometimes scabridulous and paler beneath and densely glandular-pilosulous, pinnately veined; secondaries about 7, sometimes elevated, the lowest issuing in 3-plinerved fashion from the leaf-base; veinlet reticulation impressed above and prominent beneath; peduncles obsolete or to 2 cm. long, canescent with close antrorse hairs, in the axils of the leaves or of ovate or ovate-elliptic leaf-like apical bracts; heads at first subglobose, later short-cylindric and pedunculate, to 1.5 cm. long, 6--7 mm. wide, corymbose at the apex of the branches, the corymbs forming a wide inflorescence; bractlets imbricate, broadly ovate, 3--4 mm. long, 2--2.5 mm. wide, acuminate at the apex, not at all squarrose, more or less covered with short antrorse hairs, short-ciliolate along the margins; calyx small, almost 2 mm. long during anthesis, the wings white-ciliate, the long hairs surpassing the bractlets on both sides, the remainder green, glabrescent, and covered with minute shiny glands, the 2 lobes subentire; corolla hypocrateriform, white or yellowish to blue, puberulent above, the tube exerted almost 3 mm. from the calyx-mouth, the lips small, rounded, the anterior one larger, the lobes almost 1 mm. long; stamens and pistil normal for the genus, included; fruit scarcely 2 mm. long and 1--1.5 mm. wide, pilosulous at the apex around the base of the style, otherwise smooth, bilocular, the cocci perfectly coherent.

This species was proposed by Briquet (1904) with two varieties: var. subintegra, based on a collection by Emil Hassler (no. 6919) from "in valle flum. Y-acá, in campis pr. Valenzuela" and described as "Folia.....integra, vel apicem versus obscure crenulata", and var. crenato-dentata (described as "Folia.....regulariter crebre crenato-dentata, dentibus extus rectiusculis vel convexiusculis, intus rectiusculis, culminibus prorsus versis 0,5--1 mm. altis et 1--2 mm. distantibus"), based on Hassler 1807 & 7903 -- for former from "in palude pr. Tucanguá, Jan." and the latter from "In campis et dumetis in regione superioris fl. Apa, XI.1901", all deposited in the Delessert Herbarium at the Conservatoire et Jardin Botaniques at Geneva. The var. crenato-dentata is apparently regarded as the typical variety. From specimens of each of these collections which I have seen it would appear that the numbers were transposed somewhere along the line or else the material intergrades under each number. The material of 7903 certainly seems to represent his var. subintegra, while that of 6919 appears to represent very well var. crenato-dentata. I am arbitrarily designating Hassler 6919 as logotype of L. sclerophylla, the original having been photographed by Macbride in the Delessert Herbarium as his type photograph number 246677.

Briquet (1904) says: "Le L. sclerophylla appartient à la section Dipterocalyx où il se rapproche du L. hirta (Cham.) Schauer.

Dans ce dernier, les capitules sont disposés en racème simple et court; ici les capitules sont groupés en corymbes qui forment une vaste inflorescence. D'ailleurs, le port général, le mode de serrature des feuilles, les bractées acuminées au sommet (obtusées dans de L. hirta) etc. ne permettent pas de confondre les deux espèces. Quant au L. Hassleriana ci-dessus mentionné, ses capitules sont disposés en grappes et non pas en corymbes; la forme de ses feuilles, des bractées coriaces, des corolles notablement plus grandes, etc., etc., permettent de lui attribuer des affinités beaucoup plus éloignées. L'apparence du L. sclerophylla rappelle celle des espèces du groupe Corymbosae de la section Euza-pania."

In Lilloa 5: 425 the original page reference for L. sclerophylla is given as "1162" in error. In the Instituto Miguel Lillo the original publication for the species and its so-called varieties is given as "Plantae Hasslerianae X (1904) 489 & 490".

Troncoso (1961) classifies the species in her Subgenus Lippia, Section Dipterocalyx, along with L. hirta (Cham.) Meisn. and L. hassleriana Chod. She says "Briquet describe la especie en base a dos variedades, var. crenato-dentata y var. subintegra. Basa la primera en los sintipos Hassler 1807 y 7903 y la segunda en Hassler 6919. Moldenke (1942) establece la var. crenato-dentata como var. típica, pero sin indicar tipo. Hoy día debe llamarse var. sclerophylla. Revisados los sintipos del Herbario de Ginebra, considero debe elegirse como lectotipo Hassler 1807, por ser el ejemplar que coincide más exactamente con la diagnosis original. En efecto, Briquet al describir el fruto dice: 'fructus apice circa styli basim pilosus, caeterum laevis.....', carácter que presenta Hassler 1807. En el otro ejemplar, Hassler 7903, la base del estilo, el ovario y el fruto son completamente glabros....Coincidentemente con este carácter, los ejemplares de estilo y ovario pubescente poseen cáliz algo más breve y sus lóbulos poco más largos en relación al tubo." She maintains var. subintegra as valid and comments "En esta variedad el ovario y fruto son glabros."

Dr. Raymond Weibel, in a letter to me dated June 4, 1951, makes the following comments about this species and Briquet's so-called varieties: "I have examined the specimens of Herb. Hassler (which is kept separately in our collections) and the duplicates which are in our general collection and which had been given by Hassler around 1900 to Herb. Delessert and to Herb. de Candolle.

"It does not seem that Briquet has accidentally transposed the numbers in his manuscript but I would rather think that the leaf serration is a very variable character which could not justify the existence of varieties; another explanation might be that Hassler made some errors while numbering his duplicates.

"1. Lippia sclerophylla var. crenato-dentata. For No. 1807 we have only a specimen from Herb. Hassler determined by Briquet

as Lippia sclerophylla v. crenato-dentata Briq. : leaves entire near the base to the inferior 1/4, for the rest crenate-dentate, the teeth acute and pointing upward (corresponding to Briquet's description); length of leaf limb ad 4,4 cm., width ad 2,3 cm.

"Hassler 1903 : 1st specimen in Herb. Hassler without determination in Briquet's handwriting : at the base of twig, the leaves are rather deeply crenate-dentate with obtuse teeth; near the tip of the twig the leaves are entire at the base, for the rest less deeply dentate with acute teeth. Length of limb ad 5,5 cm., width ad 2,3 cm.

"2nd specimen in Herb. Delessert with original label copied by Briquet and bearing in his handwriting: Lippia sclerophylla Briq. (no variety given). Leaves slightly crenate-dentate, teeth subacute. Length of limb ad 5,5 cm., width ad 1,9 cm.

"3rd specimen in Herb. de Candolle (no determination by Briquet). Some leaves are obtusely and slightly crenate-dentate, others are 'subintegra'. Length of limb ad 5,5 cm., width ad 2,8 cm.

"These three specimens have their limbs entire near the base.

"2. Lippia sclerophylla var. subintegra. 1st specimen from Herb. Hassler determined as Lippia sclerophylla Briq. sp. nov. v. subintegra by Briquet, has entire leaves, some of them are lightly denticulate near the tip; length (most of them) ad 3,5 cm., width ad 1,5 cm. One leaf only is longer than 4 cm. (it is broken) and 2 cm. wide.

"A second specimen from Herb. Hassler has not been determined by Briquet; its leaves are entire up to the lower half, obtusely and not deeply crenate-denticulate on the upper half; length ad 4,8 cm., width ad 1,9 cm.

"A third specimen in Herb. de Candolle has not been determined by Briquet and has been photographed by Macbride (No. 24.667). One branchlet is divided in 3 small twigs with leaves entire for the lower half of the limb; some are slightly and obtusely crenate-dentate for the upper half of the limb, others are subentire; length of leaves ad 4,7 cm., width ad 2,3 cm.; another separate twig bears leaves which are rather deeply crenate-dentate, the teeth subacute, length of leaves ad 3,3 cm., width ad 1,5 cm."

Lippia sclerophylla has been found on campos and dry campos, high rocky places, in thickets and ravines, in fields, and in fertile soil, at altitudes of 216 to 224 meters, flowering from November to April, fruiting in February. Jorgensen reports it as "common" on campos, while Montes describes it as "abundant" in high places on campos and matorales. A vernacular name recorded for it is "perfumada del campo". The flowers are described as "blue" on Montes 475, "yellowish" on Hassler 1807, and "white" on Anisits 2353, Hassler 7903, Jorgensen 4580, Montes 1815, Schulz 7128, and Schwarz 950, 1006, 1036, 2138, & 2216. Material has been misidentified and distributed in herbaria as L. hassleriana Chod.

In all, 66 herbarium specimens, including type material of all the names involved, and 4 mounted photographs have been examined

by me.

Citations: PARAGUAY: Anisits 2353 (S), 2750 (S, S); Hassler 6919 [Macbride photos 24667] (Ca--944352--logotype, It--photo of logotype, Kr--photo of logotype, Mi--logotype, N--logotype, N--logotype, N--photo of logotype, S--logotype, S--logotype, W--photo of logotype), 7903 (Ca--944350, Mi, N, S), 8988a (N), 8988c (N), 12500 (Ca--929700, Go, N, S, W--1057396); Jorgensen 4580 [Herb. Osten 22253] (Du--203302, La, N, N, S, Ug, W--1541007); Wunderli 54 (Ca). ARGENTINA: Misiones: Bertoni 2626 (N); Ekman 1996 (Mi, N, S), 2036 (S); Grüner 69 (N); Lilliesköld s.n. [vicinity of Colonia Bonpland] (S); T. Meyer 6658 (Ut--74570), 11585 (N); Montes 368 (N, S), 475 (Ca, W--2058924), 732 (S, W--2049842), 896 (S, W--2049843), 1815 (N, Ug); D. Rodriguez 178 [Herb. Mus. Argent. Cienc. Nat. 23836; Herb. Inst. Miguel Lillo 32244] (Ca--3314, N, N, W--1802573, W--1858266); A. G. Schulz 7128 (Sz), 7181 (Z); G. J. Schwarz 535 (W--1933983), 670 (Ca), 691 (Ca), 950 (Ca, W--2049774), 1006 (N, S), 1036 (Ca), 1491 (Vi), 2138 (N), 2216 (N), 2579 (N).

LIPPIA SCLEROPHYLLA var. LORETENSIS Moldenke, Lilloa 5: 428. 1940.

Bibliography: Moldenke, Lilloa 5: 428. 1940; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 43 & 96. 1942; Moldenke, Alph. List Cit. 1: 249. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 105 & 191. 1949; Moldenke, Résumé 126 & 462. 1959.

This variety differs from the typical form of the species in being very sparsely pilose or subglabrate, its leaves being thin-chartaceous, glabrous or subglabrate and resinous-punctate beneath, ciliate along the margins, and sparsely sharp-toothed only above the middle.

The type of the variety was collected by Glied Grüner (no. 703) at Loreto, Misiones, Argentina, on March 14, 1931, and is deposited in the Britton Herbarium at the New York Botanical Garden. The variety is known to me only from the type specimen.

Citations: ARGENTINA: Misiones: Grüner 703 (N--type).

LIPPIA SERICEA Cham., Linnaea 7: 228--230. 1832.

Synonymy: Lippia argentea Mart. ex Hiern, Vidensk. Meddel. Kjøbenh. 1877-1878: 97, in syn. 1877. Lantana sericea Cham. ex Moldenke, Alph. List Invalid Names Suppl. 1: 13, in syn. 1947. Lippia incana Mart. ex Moldenke, Alph. List Invalid Names Suppl. 1: 14, in syn. 1947. Lippia sericea Cham. & Schlecht. ex Moldenke, Alph. List Invalid Names Suppl. 1: 15, in syn. 1947.

Bibliography: Cham., Linnaea 7: 228--230. 1832; Steud., Nom. Bot., ed. 2, 2: 54. 1840; D. Dietr., Syn. Pl. 3: 598--599. 1843; Walp., Repert. Bot. Syst. 4: 52. 1845; Schau. in A. DC., Prodr. 11: 578. 1847; Schau. in Mart., Fl. Bras. 9: 230. 1851; Hiern, Vidensk. Meddel. Kjøbenh. 1877-1878: 97--98. 1877; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 96. 1894; Glaz., Bull. Soc. Bot.

France 58, Mém. 3: 541. 1911; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 38 & 96. 1942; Moldenke, Alph. List Cit. 1: 106, 107, 141, & 230. 1946; Moldenke, Alph. List Invalid Names Suppl. 1: 13--15. 1947; Moldenke, Alph. List Cit. 2: 364 & 486 (1948), 3: 676, 689, 709, 710, 725, 730, 856, 890, & 921--923 (1949), and 4: 1134, 1135, & 1300. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 81 & 191. 1949; Moldenke, Inform. Mold. Set 48 Spec. [3]. 1954; Moldenke, Résumé 94, 307, 310, 313, 317, & 462. 1959; Rennó, Levant. Herb. Inst. Agron. Minas 150. 1960; Moldenke, Résumé Suppl. 6: 6. 1963; Moldenke, Phytologia 12: 23, 113, & 355. 1965.

Bush, subshrub, or shrub, 0.5--1.5 m. tall, incanous-sericeous throughout; stems many, virgate, strict, mostly simple or fastigiate-branched above, issuing from an oblique nodose rhizome, tetragonal, terminated by the inflorescence, the angles rounded, the sides sulcate; leaves decussate-opposite, ternate, or quaternate-verticillate, erect-spreading, very short-petiolate, the lowest largest; leaf-blades broadly ovate (the lower ones) or elliptic (the upper ones), to almost 4 cm. long and 3 cm. wide, acute at both the apex and the base, coarsely crenate-serrulate along the whole margin or with the apex and base entire, 3--5-veined in pinnate fashion, sericeous or villous, the middle ones smaller and more or less elliptic, the upper ones shorter than the internodes, the floral ones small, still shorter, and surpassed by the flower-heads; veinlet reticulation impressed above, prominent beneath; inflorescence axillary, paired or ternate, short-pedunculate, reflexed, forming a more or less elongate verticillate almost naked raceme with much reduced floral leaves (bracts) toward the apex of the stems; peduncles 6 mm. long or longer; heads rather large, tetraquetrous-ovoid or subprismatic, finally 1.3 cm. long; bractlets membranous, suberect, imbricate, ovate, more or less acuminate at the apex, folded, carinate, sericeous-villous, subequaling the corolla-tube, lightly glandulose, villous on the outer surface with long hairs throughout (especially on the margins) from the beginning, shiny and sparsely puberulent on the inner surface; calyx 2 mm. long, bifid, sericeous-villous, shortly 4-dentate; corolla hypocrateriform, white to pale-yellow or yellow, densely puberulent on the outside, the tube straight, 5 mm. long, inflated at the middle, the limb suborbicular, the lobes rounded, the margins crisped.

The type of this species was collected by Friedrich Sellow (no. B.1441) at Fazenda da Jaguará, Goiás, Brazil [although Chamisso's original publication says only "e Brasilia. Sellow"], and was deposited in the herbarium of the Botanisches Museum at Berlin, where it was photographed by Macbride as his type photograph number 17545, but is now destroyed. The type of L. argentea was collected by Carl Friedrich Philipp von Martius (no. 1046) at Serra de Itatiaya, Minas Gerais, in April, 1839, and is deposited in the herbarium of the Botanisches Museum in Munich; that of L. incana was gathered by Johann Emanuel Pohl somewhere in Goiás, Brazil, in 1834, and is deposited in the herbarium of the Jardin

Botanique de l'Etat at Brussels.

Schauer (1847) classifies the species in his Section Gonio-stachyum and cites (1851) the following specimens: Goiás: J. E. Pohl s.n. [in Serra Dourada ad Agua Quente], s.n. [Caldas], s.n. [in tota via a Bomfim tum etiam ad Ponte d'Erva]; Sellow s.n. [ad praedium Facenda da Jaguará]. Minas Gerais: Lund s.n. [in campis petrosis prope Barbacena]; Martius 1046; Schüch de Capanema s.n. [Prope Villa Rica et alibi]; Vauthier 413. São Paulo: L. Riedel s.n. [in campis siccis inter Batataes et Villa Franca]. It should be noted, however, that he indicates that the Lund and Riedel collections are also from Goiás, but this seems to be an error on his part. In his 1847 publication he says "Frequens in campis Brasiliae, impromis prov. Minarum (Sell.! Pohl! Mart.! herb. fl. bras. n. 1046, Bauth.! herb. bras. n. 413, Ried.!)" deposited in the Vienna, Leningrad, Berlin, Munich, and DeCandolle herbaria.

The species has been found on campos, dry and rocky campos, rocky grassy hilltops, and in fields, at altitudes of 700 to 1500 meters, flowering from March to July. Miss Mexia describes it as "frequent". The flowers are referred to as "white" on Williams & Assis 6190 & 6716, "pale-yellow" on Mexia 5613, and "yellow" on Macedo 2289, Mendes Magalhães 1741, and Williams & Assis 7167. Glaziou 21914 is a mixture with L. pohliana Schau.

In all, 52 herbarium specimens, including type material of all the names involved, and 17 mounted photographs have been examined by me.

Citations: BRAZIL: Brasilia: Heringer 8462 (N), 8462/556 (N). Goiás: G. Gardner 3942 (Cb); J. E. Pohl s.n. [Brasilia, 1834] (Br, F--photo, N--photo, Si--photo, Z--photo), s.n. [Brasilia, 1839] (Br, F--photo, N--photo, Si--photo, Z--photo); Sellow B.1441 [Brasilia; Macbride photos 17545] (Br--isotype, F--photo of isotype, It--photo of type, Kr--photo of type, N--isotype, N--photo of type, N--photo of type, N--photo of isotype, Si--photo of isotype, Vt--isotype, W--photo of type, Z--photo of isotype). Minas Gerais: Brade 11849 (Ja--46494), 13905 [Herb. Rio de Jan. 29532] (B); P. Clausen 613 (Cp, N, S), s.n. [Aug.-April 1840] (Br, Br, Br, Br), s.n. (N); Glaziou 15331 (Br), 21914, in part (Br); Macedo 687 (N, S), 2289 (N, S); Martius 1046 [129] (Br, Br, M); Mello Barreto 3208 [Herb. Jard. Bot. Belo Horiz. 5157] (Ja--32310, N); Mendes Magalhães 1741 (Be--14565); Mexia 5613 (Gg--336142, N, S); A. Saint-Hilaire C'.218 (N); L. B. Smith 6987 (N, Z); Williams & Assis 6190 (G, N), 6716 (G, N), 7167 (G, N). São Paulo: G. Gehrt s.n. [Pedregulho, April 10, 1920] (N, Sp--4029); N. Lund s.n. [Franca, June '34] (Cp, Cp, Cp); Riedel & Lund 2315 (N). State undetermined: P. Clausen s.n. [Brésil] (W--2383078); Damazio 272 [Caethé] (Cb); G. Gardner 4333 (N); Heringer 3670 (Z).

LIPPIA SESSILIFLORA J. G. Baker, Journ. Linn. Soc. Lond. Bot. 20: 226, in textu. 1883.

Bibliography: J. G. Baker, Journ. Linn. Soc. Lond. Bot. 20: 226. 1883; Moldenke, Phytologia 12: 56. 1965.

Baker, in the reference given above, compares his Lippia oligophylla with a "L. sessiliflora", but L. oligophylla J. G. Baker is a synonym of Acrocephalus villosus Benth. in the Lamiaceae, so there is no telling what his L. sessiliflora may be. Nothing else whatever is known to me about this plant.

LIPPIA SIDOIDES Cham., Linnaea 7: 224--225. 1832.

Synonymy: Lippia sidoides Cham. apud Hayek, Denkschr. Kaiser. Akad. Wissensch. Math.-nat. 79 (1): 295, sphalm. 1908. Lippia multicapitata Mart. ex Moldenke, Alph. List Invalid Names Suppl. 1: 14, in syn. 1947.

Bibliography: Cham., Linnaea 7: 224--225. 1832; Steud., Nom. Bot., ed. 2, 2: 54. 1840; D. Dietr., Syn. Pl. 3: 598. 1843; Walp., Repert. Bot. Syst. 4: 50--51. 1845; Schau. in A. DC., Prodr. 11: 575. 1847; Schau. in Mart., Fl. Bras. 9: 224. 1851; Bocq., Adansoniana 3: 244. 1863; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 96. 1894; Briq. in Engl. & Prantl, Nat. Pflanzenfam. 4 (3a): 152. 1895; Briq., Ann. Conserv. & Jard. Bot. Genève. 7-8: 308--309. 1904; Hayek, Denkschr. Kaiser. Akad. Wissensch. Math.-nat. 79 (1): 295. 1908; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 38 & 96. 1942; Augusto, Fl. Rio Grande do Sul 233 & 234. 1946; Moldenke, Alph. List Cit. 1: 106. 1946; Moldenke, Alph. List Invalid Names Suppl. 1: 14. 1947; Moldenke, Alph. List Cit. 2: 366 & 533 (1948), 3: 669, 689, 837, 838, & 921--923 (1949), and 4: 1134, 1167, & 1203. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 81 & 191. 1949; Troncoso, Darwiniana 10: 72 & 86--88, fig. 7. 1952; Moldenke, Résumé 94, 314, 317, & 462. 1959; Rennó, Levant. Herb. Inst. Agron. Minas 150. 1960; Moldenke, Résumé Suppl. 7: 5 & 6. 1963; Moldenke, Phytologia 12: 23, 47, 152, 170, 203, 275, 333, 452m 454, & 455. 1965.

Illustrations: Troncoso, Darwiniana 10: 87, fig. 7. 1952.

Robust shrub, 0.8--3 m. tall, the youngest parts subsericeous-canescenscent; branches tetragonal, cinereous; branchlets subtetragonal, patulous, abundant, hirtellous, glabrescent; leaves decussate-opposite or ternate, variable in size; petioles short; leaf-blades oblong or ovate, 2.5--7.5 cm. long, obtuse or acute at the apex, serrulate on the revolute margins, cuneate and entire at the base, attenuate into the petiole, lineate-subrugose above, green and strigillose-pubescent above with short appressed hairs, finally scabridous, pale and opaque beneath, hirsutulous beneath or softly pilose from the first on the prominent venation, 3-nerved at the base, covered on both surfaces with shiny glands; inflorescence subsericeous-canescenscent; peduncles axillary, 2--6 per node, flaccid, longer or shorter than the subtending petiole, unequal in size as they develop; heads spicate, tetraquetrous-ovoid, very compact, 6--8 mm. long; bractlets membranous, lax, imbricate, ovate, acute at the apex, folded, pale, equaling the

corolla-tube, pilose throughout from the first especially on the keel and margins; calyx 2 mm. long, loosely investing the corolla-tube; corolla hypocrateriform, white, yellow in the throat, subhirtellous on the outer surface, the tube very slender, 5 mm. long, slightly ampliate above, bearing the stamens within, the limb 3--4 mm. wide, the lobes rounded, crisped on the margins.

This species was apparently based on several collections made by Friedrich Sellow (no. 1448 & s.n.) in Rio de Janeiro, Brazil, on September 24, 1818, and deposited in the herbarium of the Botanisches Museum in Berlin, where the unnumbered one was photographed by Macbride as his type photograph number 17546, but now destroyed. Chamisso, in his original publication, says that the species is based on "Sellow e Brasilia misit, speciminaque macrophylla microcephala e Buon Retiro". The type of L. multicapitata was collected by Johann Emanuel Pohl at São Lucia, Minas Gerais, Brazil, deposited in the herbarium of the Jardin Botanique de l'Etat at Brussels and sent there in 1839 from the Vienna herbarium.

The species has been found at the edge of forests in sandstone areas and along roadsides, at an altitude of 1100 meters, flowering in March, May, June, September, October, and December. The flowers are described as "white" on Assis 221, D. A. Lima 1253, Mendes Magalhães 4317, and Williams & Assis 6807. Schauer (1847) classifies the species in his Section Goniostachyum and cites (1851) the following specimens: Minas Gerais: P. Clausen 383, Martius s.n. [in campis desertis retro flumen Jaquetinhonha (Serro Frio)], Raven s.n. [in ruderalis ad fl. Sapucahy pr. praedium S. Barbarae], L. Riedel s.n. [ad ripam fluvii das Velhas dicti], Vauthier 411. Rio de Janeiro: Sellow s.n. [prope Buen Retiro], s.n. [prope S. Ignacio]. Rio Grande do Sul: J. E. Pohl s.n. [prope urbem S. Luciae]. São Paulo: J. E. Pohl s.n. [circa Sebastianopolis]. Hayek (1908) cites Wacket s.n. [prope Ypanema haud procul ad urbe Sorocaba] from São Paulo. Troncoso (1952) records it from Misiones, Argentina.

Material has been misidentified and distributed in herbaria as L. martiana Schau. and L. organoides H.B.K. On the other hand, the Regnell III.942 is a mixture with L. elegans Cham., and the Mendes Magalhães 1887, distributed as L. sidoides, is actually L. salviaefolia Cham.

Troncoso (1952) compares L. hickenii Troncoso with L. sidoides as follows: "Otra especie vecina es L. sidoides Cham., pero esta especie no posee las brácteas soldadas características de L. Hickenii. Esta diferencia fundamental la he podido comprobar por comparación gracias a la gentileza del Dr. F. C. Hoehne, da São Paulo, quien me envió material de L. sidoides determinado por el Dr. Moldenke y procedente de su área general típica (L. sidoides Cham., Brasil, Sao Paulo, Itú, A. Russell No. 82, X-1897; São Paulo, Sorocaba, A. Lofgren No. 248, X-1887; dupl. SI,)"

Briquet (1904) compares his L. polycephala [now regarded as a

synonym of L. salviaefolia Cham.] with L. sidoides as follows: "Ces plantes [Clausen 128 & s.n., Vauthier 411] ont été rapportées par Schauer, pour autant qu'il les connaissait, au L. sidoides Cham. Cette détermination est jusqu'à un certain point justifiée, parce que Chamisso a fait suivre.....la description princeps du L. sidoides de la description de trois autres plantes différentes rattachées par l'auteur au L. sidoides, ce qui rend son espèce peu claire. L'original de Sellow, sur lequel est basé le L. sidoides, se distingue facilement du L. polycephala par ses rameaux glabrescents, ses feuilles plus minces obtusément dentées, scabres à la face supérieure (indument velouté dans le L. polycephala), très cunéiformes à la base, ses capitules moins nombreux, brièvement pédonculés, etc. Jusqu'à ce que des formes intermédiaires soient venues combler la lacune existante entre les L. sidoides et L. polycephala — formes que nous n'avons pas encore rencontrées dans les herbiers -- nous devons considérer les L. sidoides et L. polycephala comme des espèces distinctes."

In all, 28 herbarium specimens, including type material of all the names involved, and 4 mounted photographs have been examined by me.

Citations: BRAZIL: Minas Gerais: Assis 221 (G, N); P. Clausen 383 (Br), 615 (N), s.n. [Aug.-April 1840] (Br, Br); Mello Barreto 3312 [Herb. Jard. Bot. Belo Horiz. 2596] (N); Mendes Magalhães 4317 [Herb. Jard. Bot. Belo Horiz. 45117] (N); J. E. Oliveira 1315 [Herb. Jard. Bot. Belo Horiz. 45154] (N); J. E. Pohl s.n. [S. Luciae] (Br); Regnell III.942 [3/5/1847] (W--1322969), III.942 [25/10/1848] (W--209729, W--1322968); Williams & Assis 6807 (G, N, S). Pernambuco: D. A. Lima 1253 [49-252] (Be--80183). Rio de Janeiro: Sellow 1448 (Vt--cotype), s.n. [Brasilia; Macbride photos 17546] (Kr--photo of cotype, N--cotype, N--photo of cotype, N--photo of cotype, Vt--cotype, W--photo of cotype). São Paulo: Löfgren 248 (Cp, N), s.n. [Sorocaba; Herb. Comm. Geogr. & Geol. S. Paulo 248] (Sp--15665); A. Russel 82 (Sp--20073). State undetermined: J. E. Pohl s.n. [Brasiliae, 1839] (Br); Raben 529 [547] (Br), 751 (Br), 762 (Br).

LIPPIA SIDOIDES f. FLACCIDA Hayek, Denkschr. Kaiser. Akad. Wissensch. Math.-nat. 79 (1): 295 [as "sidoides"]. 1908.

Bibliography: Hayek, Denkschr. Kaiser. Akad. Wissensch. Math.-nat. 79 (1): 295. 1908; Moldenke, Phytologia 3: 305. 1950; Moldenke, Résumé 94, 317, & 462. 1959.

This variety differs from the typical form of the species in having its peduncles elongated, 4--6 times as long as the heads, almost as long as the subtending leaves.

The type of the variety was collected by Matthias Wacket in the vicinity of Franca, Minas Gerais, Brazil, and is probably deposited in the herbarium at Vienna. Nothing is known to me of this taxon except what is given in the original description.

LIPPIA SOMALENSIS Vatke, *Linnaea* 43: 527--528 [as "L.? somalen-
sis"]. 1882.

Bibliography: Vatke, *Linnaea* 43: 527--528. 1882; Jacks. in Hook. f. & Jacks., *Ind. Kew.* 2: 96. 1894; J. G. Baker in *Thiselt. Dyer, Fl. Trop. Afr.* 5: 279--280. 1900; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 1], 46 & 96 (1942) and [ed. 2], 110 & 191. 1949; Moldenke, *Résumé* 135 & 462. 1959; Cuf., *Bull. Jard. Bot. Brux.* 32: Suppl. 792. 1962; Moldenke, *Phytologia* 12: 42, 106, 230, 264, 307, 352, & 431. 1965.

Much-branched undershrub, 1--1.3 m. tall; branchlets woody, slender, very scabrous; leaves decussate-opposite, short-petiolate; leaf-blades obovate or orbicular, less than 2.5 cm. long, very rigid, obtuse at the apex, crenate along the margins, scabrous and rugose above, pubescent beneath, the venation prominently raised beneath; peduncles axillary at the upper nodes, 2-4 per node, long, stiff, ascending; heads globose, 8 mm. long; bractlets very closely imbricate, orbicular, with a large terminal cusp, the outer ones 4 mm. wide; corolla milk-white, not surpassing the subtending bractlet.

The type of this apparently rare species was collected by Johann Maria Hildebrandt (no. 1443) at 5800 feet altitude near Maid, British Somaliland. Nothing is known to me of this species except what is given in the literature.

LIPPIA STACHYOIDES Cham., *Linnaea* 7: 227--228. 1832.

Bibliography: Cham., *Linnaea* 7: 227--228. 1832; Steud., *Nom. Bot.*, ed. 2, 2: 54. 1840; D. Dietr., *Syn. Pl.* 3: 598. 1843; Walp., *Repert. Bot. Syst.* 4: 51--52. 1845; Schau. in A. DC., *Prodr.* 11: 578. 1847; Schau. in Mart., *Fl. Bras.* 9: 230 & 307, pl. 37, fig. 1. 1851; Hiern, *Vidensk. Meddel. Kjøbenh.* 1877-1878: 98. 1877; Jacks. in Hook. f. & Jacks., *Ind. Kew.* 2: 96. 1894; Hayek, *Denkschr. Kaiser. Akad. Wissensch. Math.-nat.* 79 (1): 296. 1908; Glaz., *Bull. Soc. Bot. France* 58, *Mém.* 3: 541. 1911; Stapf, *Ind. Lond.* 4: 125. 1930; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 1], 38 & 96. 1942; Moldenke, *Alph. List Cit.* 1: 121, 177, & 289 (1946), 2: 362, 366, 370, 534, & 553 (1948), 3: 670, 675, 689, 704, 846, 856, & 923 (1949), and 4: 1094 & 1300. 1949; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 81 & 191. 1949; F. C. Hoehne, *Ind. Bibl. & Num. Pl. Col. Com. Rondon* 349. 1951; Moldenke, *Résumé* 94 & 463. 1959; Rennó, *Levant. Herb. Inst. Agron. Minas* 150. 1960; Moldenke, *Phytologia* 12: 23 & 170. 1965.

Illustrations: Schau. in Mart., *Fl. Bras.* 9: pl. 37, fig. 1. 1851.

Subherbaceous shrub, 0.7--1.3 m. tall, lanate-tomentose throughout, with the habit of Stachys germanica L.; stems strict, simple, terminating in the interrupted almost leafless racemiform panicle; leaves decussate-opposite or ternate, short-petiolate or sessile, the middle ones largest, somewhat or considerably longer than the internodes, the lowest ones small, those in the inflorescence gradually reduced and verticillate; leaf-blades el-

liptic or ovate, 4--7.5 cm. long, obtuse to acute or apiculate at the apex, crenate along the margins, pinnately veined, rugose, holosericeous above, incanous beneath; inflorescence axillary, numerous, aggregate; heads short-pedunculate, tetraquetrous-subglobose to prismatic, dense, at first 6 mm. long, later elongating to 16 mm., rather thick; bractlets herbaceous, ovate, subulate-acuminate, incurved at the apex, imbricate, canescent-hirtous, subequaling the corolla-tube; calyx very short, sericeous-villous, bifid, very shortly 4-dentate; corolla hypocrateriform, red or rose to lilac or purple, sometimes white, yellow in the throat, pubescent upwards from the middle on the outside, the tube 4 mm. long, subincurved, inflated at the middle, the lobes of the limb subcrenate on the margins.

The type of this distinct species was collected by Friedrich Sellow somewhere "in Brasilia meridionali" and was deposited in the herbarium of the Botanisches Museum at Berlin, where it was photographed by Macbride as his type photograph number 17548, but is now destroyed. The species has been found on campos and dry campos and cerrado, at 650 meters altitude, flowering from October to February and in May and August. Eiten found it on cutover and burned campo cerrado, the ground plowed for planting of Pinus, the ground vegetation returning with grasses, herbs, and small shrubs, the soil poor, reddish-brown fine sand with a little clay.

Schauer (1847) classifies the species in his Section Gonio-stachyum and cites (1851) the following specimens: Goiás: J. E. Pohl s.n. [ad Montes claros]. Matto Grosso: L. Riedel s.n. [ad Camapuan]. Minas Gerais: J. E. Pohl s.n. [ad Ouro Fino]. São Paulo: Lund s.n. [prope Ytu]. Hayek (1908) cites Wacket s.n. from "in circuitu urbis Franca", Minas Gerais.

The flowers are described as "purple" on Eiten 1575, "white" on F. C. Hoehne Com. Rondon 1309, "red" on Regnell III.941 [Jan. 2, 1849], "rose" on Fecippe 15 and Macedo 1527, and "lilac" on Hoehne & Gehrt s.n. and Macedo 175, 176, & 1527 (in part).

In all, 29 herbarium specimens and 5 mounted photographs, including phototype material, have been examined by me.

Citations: BRAZIL: Goiás: Macedo 1527 (N, S, W--2196608). Matto Grosso: F. C. Hoehne Com. Rondon 1309 (N); Malme 2180 (S), 2180a (S). Minas Gerais: Macedo 175 (N), 176 (N, S); Regnell III.941 [Uberava, Jan. 2, 1849] (N, S). São Paulo: Black 51-11103 (Z); Edwall s.n. [Morro Pelado, Jan. 1901; Herb. Com. Geogr. & Geol. S. Paulo 5846] (N, Sp--15661); G. Eiten 1575 (W--2369599); Fecippe 15 (N); Hoehne & Gehrt s.n. [Mogy-mirim, Nov. 18, 1936] (N, Sp--36884); Löfgren s.n. [Itapetininga, Dec. 16, 1887; Herb. Com. Geogr. & Geol. S. Paulo 477] (N, Sp--15666); Regnell III.941 [9/1/1849] (W--1322978), III.941 [Canna Verde, Oct. 1855] (S, W--201126), III.941a (S); Riedel & Lund 2072 (N); A. P. Viégas s.n. [between Mogy-mirim & Campinas, Feb. 5, 1939; Herb. Inst. Agron. S. Paulo 3813] (N, Sp--42005). State unde-

terminated: Lund s.n. [Febr. '34] (Cp, Cp, N--photo, Z--photo);
Sellow s.n. [Macbride photos 17548] (It--photo of type, Kr--photo
of type, N--photo of type, N--photo of type, W--photo of type).

LIPPIA SUBRACEMOSA Mansf., Notizbl. Bot. Gart. Berlin 9: 155.
1924.

Synonymy: Lippia violacea Moldenke, Phytologia 2: 470--471.
1948.

Bibliography: Mansf., Notizbl. Bot. Gart. Berlin 9: 155. 1924;
A. W. Hill, Ind. Kew. Suppl. 7: 139. 1929; Moldenke, Known Geogr.
Distrib. Verbenac., [ed. 1], 37 & 96. 1942; Moldenke, Phytologia
2: 470--471 & 480. 1948; Moldenke, Known Geogr. Distrib. Verbenac.,
[ed. 2], 81 & 191. 1949; Moldenke, Alph. List Cit. 3: 675 & 690.
1949; Moldenke, Phytologia 3: 305. 1950; E. J. Salisb., Ind. Kew.
Suppl. 11: 138. 1953; Moldenke, Résumé 94 & 463. 1959; Rennó, Le-
vant. Herb. Inst. Agron. Minas 150. 1960; Moldenke, Phytologia 12:
211. 1965; Moldenke, Résumé Suppl. 12: 4 & 11. 1965.

Shrub, about 2 m. tall; branches stramineous or brunnescent,
rather obtusely tetragonal, short-pubescent with uncinatè bulbous-
based hairs; branchlets much more densely pubescent with sordid-
gray or cinereous hairs, virgate; nodes annulate; principal inter-
nodes 1--4.8 cm. long; leaves decussate-opposite, numerous; peti-
oles very slender, 1--4 mm. long, densely cinereous-pubescent;
leaf-blades more or less diamond-shaped or elliptic, varying to
ovate, chartaceous, 1.3--2.5 cm. long, 9--15 mm. wide, acute or
obtuse at the apex, regularly serrulate from below the middle to
the apex, acute at the base, densely puberulent and resinous-
punctulate above, very densely short-pubescent and more or less
resinous-punctulate beneath; midrib very slender, subimpressed a-
bove, prominulous beneath; secondaries very slender, 4 or 5 per
side, ascending, not arcuate, often subimpressed above, subpro-
minulous beneath, not at all anastomosing, each secondary or one
of its branches ending in a sinus between two teeth; veinlet re-
ticulation obscure or subimpressed above, plane beneath; inflor-
escence axillary, capitate, 2 per node, 1.5--2 cm. long, mostly
about equaling the subtending leaves; peduncles very slender, a-
bout 1 cm. long, densely short-pubescent with rather appressed
sordid-cinereous hairs; heads densely flowered, hemispheric, 1--
1.5 cm. wide; bractlets lanceolate-lingulate, about 5 mm. long
and 1.5 mm. wide, strigillose; calyx about 5 mm. long, densely
white-hirsute, especially on the margins and resinous-granular;
corolla violet, its tube 5--6 mm. long, rather scattered-strig-
illose or puberulent above the calyx, its limb about 5 mm. wide.

The type of this species was collected by Freiherr Philipp
von Luetzelburg (no. 710) at Santa Maria, Pao do Moco, Bahia,
Brazil, and was deposited in the herbarium of the Botanisches
Museum at Berlin, where it was photographed by Macbride as his
type photograph number 17549, but is now destroyed. The type
of L. violacea was collected by Geraldo Mendes Magalhães (no.
1768) on the campo between Capivari and Pico de Itambé, Serra
Quebrada, municipality of Serro, Minas Gerais, Brazil, on May 3,

1942, and is deposited in the Britton Herbarium at the New York Botanical Garden. The species has thus far been found only on campos, flowering in May. Mansfeld (1924) says "Die nächststehende Art, L. hederæfolia Mart. et Schauer, ist schon an der mehr kopfförmigen, grösseren Infloreszenz leicht unterscheidbar."

In all, 5 herbarium specimens and 4 mounted photographs, including type or phototype material of both names involved, have been examined by me.

Citations: BRAZIL: Bahia: Lützelburg 710 [Macbride photos 16549] (Kr--photo of type, N--photo of type, N--photo of type, W--photo of type); Mendes Magalhães 1768 [Herb. Jard. Bot. Belo Horiz. 41571 & 41574] (Be--14707, N, N, N, W--2124196).

LIPPIA SUBSTRIGOSA Turcz., Bull. Soc. Nat. Mosc. 36 (2): 202. 1863.

Synonymy: Lippia kellermani Greenm., Field Mus. Publ. Bot. 2: 341. 1912. Lippia guatemalensis Gandoger, Bull. Soc. Bot. France 65: 64. 1918. Lippia strigosa Turcz. ex A. B. Seymour, Host Ind. Fungi N. Am. 588. 1929. Lippia kellermani Greenm. ex Moldenke, Prelim. Alph. List Invalid Names 31, in syn. 1940.

Bibliography: Turcz., Bull. Soc. Nat. Mosc. 36 (2): 202. 1863; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 96. 1894; Donn. Sm., Bot. Gaz. 23: 249. 1897; Greenm., Field Mus. Publ. Bot. 2: 341. 1912; Gandoger, Bull. Soc. Bot. France 65: 64. 1918; Prain, Ind. Kew. Suppl. 5: 153. 1921; P. C. Standl., Contrib. U. S. Nat. Herb. 23: 1246. 1924; A. W. Hill, Ind. Kew. Suppl. 6: 117. 1926; A. B. Seymour, Host Ind. Fungi N. Am. 588. 1929; Moldenke, Suppl. List Common Names 5. 1940; Moldenke, Prelim. Alph. List Invalid Names 31. 1940; Moldenke, Suppl. List Invalid Names 5 & 11. 1941; Calderón & Standl., Fl. Salvad., ed. 2, 238. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 17, 20--22, & 96. 1942; Moldenke, Alph. List Invalid Names 31 & 32. 1942; Moldenke, Phytologia 2: 83 & 107. 1945; Moldenke, Alph. List Cit. 1: 88 & 285. 1946; Moldenke, Phytologia 2: 330. 1947; Moldenke, Alph. List Invalid Names Suppl. 1: 14. 1947; M. C. Carlson, Bull. Torrey Bot. Club 75: 280. 1948; H. N. & A. L. Moldenke, Pl. Life 2: 66. 1948; Moldenke, Alph. List Cit. 2: 351, 361, & 536 (1948), 3: 663, 693, 714, 817, 834, 940, 948, 959--962, & 973 (1949), and 4: 1012, 1013, & 1152. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 31, 35, 37, 38, & 191. 1949; Matuda, Am. Midl. Nat. 44: 576. 1950; Moldenke, Résumé 37, 42, 44, 45, 313, 317, & 463. 1959; Moldenke, Résumé Suppl. 2: 4. 1960; Langman, Select. Guide Lit. Flow. Pl. Mex. 748 & 1010. 1964; Moldenke, Phytologia 12: 112, 137, 263, 336, & 337. 1965; Moldenke, Résumé Suppl. 12: 2. 1965.

Small, weak tree or shrub, 1--6.8 m. tall, very viscid, aromatic; stems 5--10 cm. in diameter, glutinous; branches and branchlets more or less tetragonal, compressed at the nodes, covered with brown bark, densely pubescent with hirsute and glanduliferous hairs; leaves decussate-opposite, resinous, glutinous, with a pungent odor of Lantana when crushed, short-petiolate;

petioles 0.5--1.5 cm. long, pubescent; leaf-blades chartaceous or rough-subcoriaceous, dark-green or rich grass-green above, pale gray-green or graybrown-green beneath, ovate, 3--18 cm. long, 1.5--10 cm. wide, acuminate at the apex, crenate-dentate along the margins, cordate or abruptly contracted and obtuse at the base, bullate-rugose and scabrid-hispid above, pale and reticulate-rugose beneath, densely pubescent or hirsute-tomentose beneath; peduncles 4--8 in the leaf-axils, filiform, to 3.5 cm. long, much shorter than the subtending leaves, hirsute and glandular-pubescent; heads globose or subglobose, 12--20 mm. wide, borne in a leafy panicle at the apex of the branches; bractlets pale-green, subchartaceous, ovate or broad-ovate to subreniform, 6--10 mm. long, 5--15 mm. wide, acute or acuminate at the apex, entire, venose, glandular-pubescent on both surfaces; calyx about 2.5 mm. long, bifid, very villous and short-stipitate-glandulose; corolla hypocrateriform, white, whitish, or greenish-white to yellow, creamy-yellow, or pale-yellow fading to white, 6 mm. long, oblique, glabrous below, pubescent above.

The type of this handsome species was collected by Jean Louis Linden (no. 147) near Ijtoboli, Chiapas, Mexico. An isotype photographed by Macbride as his type photograph number 24671 is deposited in the Delessert Herbarium at the Conservatoire et Jardin Botaniques at Geneva. *Lippia guatemalensis* was based on several collections made by Hans von Tuerckheim (nos. 382, 8441, & II.715) in Alta Verapaz, Guatemala. The type of *L. kellermanii* was collected by William Ashbrook Kellerman (no. 6372) -- in whose honor it was named -- at Laguna (Lake Amatitlan), at 1200 meters altitude, Amatitlan, Guatemala, on January 20, 1906, and is sheet number 225152 in the herbarium of the Chicago Natural History Museum.

Greenman (1912) places this plant in a section "*Rhodolepis*", but this is probably an error in transcription on his part for *Rhodolippia* (Schau.) Briq. He says "Hereto are referred with some doubt the following Guatemalan specimens: Department of Alta Vera Pax, Cobán, altitude 1400 m., March, 1903, H. von Tuerckheim, no. 8441 (exsiccatae John Donnell Smith); Cobán, altitude 1350 m., February, 1907, H. von Tuerckheim, no. II.715 (hb. Field Museum). The species here proposed has its affinity with *L. lupulina* Cham., *L. umbellata* Cav., *L. substrigosa* Turcz., and *L. nutans* Rob. & Greenm., but it is amply distinct and easily recognized among all the known species of the genus on account of the large broadly ovate leaf-blade, which is cordate or abruptly contracted at the base, rugose and hirsute-hispid above and sub-tomentose beneath, and glandular hairs intermixed with a spreading hirsute pubescence on stems, petioles, and peduncles."

Gandoger's original (1918) description of his *L. guatemalensis* is "Differt a *L. umbellata* Cav. pube strigosa, patula omnium partium, foliis profundis serratis minusque acuminatis, umbellis villosissimis longius pedunculatis, bracteis floralibus magis cuspidatis.....Forma singularis a speciminibus mexicanis (Ehren-

berg! Schiede! Pringle n. 7714!, etc.) abhorrens indumento hispidissimo patulo, foliis atrovirentibus, pedunculis saltem duplo longioribus."

Turczaninow's original (1863) description is "Lippia caule tetragono cum petiolis pedunculisque pilis rigidis glandulosis et substrigosis dense vestito; foliis magnis breviter petiolatis acuminatis, basi in petiolum longe attenuatis, supra bullatis piliferis, subtus reticulato-rugosis dense pubescentibus pallidioribus; pedunculis axillaribus 6--8 filiformibus folio brevioribus; capitulis globosis; bracteis ovatis acutis nervoso-pubescentibus, flores omnino tegentibus." He places the species in Section Zapania.

The species has been found growing in oak-pine or dense wet pine forests, dry oak or damp pine forests, pinelands, wet ravines, and moist thickets in pine-oak forests, along roadsides, on dry slopes, dry bushy hillsides, rocky brushy hillsides, slopes with Liquidambar, Pinus, and Quercus, steep slopes with Quercus, and on streambanks. D. R. Hunt describes the species as frequent on shrubby pine ridges in British Honduras; Standley calls it common in oak and pine forests in Chimaltenango, common in dense wet pine forests in Alta Verapaz, and scarce on brushy oak slopes in Jalapa, Guatemala; while Hernandez Xolocotzi calls it dominant as secondary growth following milpas, the wood being used for roofing in Chiapas, Mexico. It has been found at altitudes of 516 to 3000 meters, flowering from October to April and in July and August, fruiting from December to April and in October. Vernacular names recorded for it are "salvia" and "salvia santa". Seymour (1929) reports that it is attacked by the fungus Prospodium lippiae (Speg.) Arth. [Puccinia lippiae Speg.]. Standley (1924) reduces L. substrigosa to synonymy under L. umbellata Cav.

The flowers are described as "white" on Breedlove 7482; "greenish-white" on P. C. Standley 64484; "creamy-yellow" on J. A. Steyermark 42594; "yellow" on Breedlove & Raven 8187, M. C. Carlson 380, Linden 147, and Williams & Molina R.23231; "pale-yellow" on Raven & Breedlove 19864, P. C. Standley 57922, and S. S. White 5271; "pale-yellow fading to white" on Skutch 1627; and "pale-green" on Williams, Molina R., & Williams 23910.

Donnell Smith (1897), in speaking of his L. substrigosa var. oxyphyllaria [which is now known as L. oxyphyllaria (Donn. Sm.) Standl.], says: "The typical form of this species [L. substrigosa] seems to be represented by the following specimens from Guatemala, which differ from the above by tetragonal branches, ovate leaves abruptly contracted into petiole, peduncles several in the axes, orbicular-ovate bractlets: nos. 2006, 4387, 4389 Pl. Guat., etc. qu. ed. Donn. Sm.; no. 3610 Nelson."

The Calderón 476 and P. C. Standley 22945 were collected on Volcán de San Salvador, which is exactly on the boundary line between the departments of San Salvador and La Libertad in El Salvador.

Material has been misidentified and distributed in herbaria under the names L. callicarpaefolia Cham. & Schl., L. callicarpaefolia H.B.K., L. chiapasensis Loes., L. graveolens H.B.K., and L. umbellata Cav.

On the other hand, the Heyde & Lux 4387, distributed as this species, is actually L. controversa Moldenke; Yuncker, Dawson, & Youse 6003 & 6387 are L. lucens Standl.; while H. Pittier 5387 and R. S. Williams 151 are L. oxyphyllaria (Donn. Sm.) Standl. and Stern & Chambers 78 is L. torresii Standl.

In the Harvard University Herbarium there are the following specimens identified as L. substrigosa, but have not been checked by me: MEXICO: Chiapas: E. W. Nelson 3114 (G). GUATEMALA: Sacatepequez: Hunnewell 14797 (G). HONDURAS: Morazán: Molina R. 3077 (G); Williams & Molina R. 17127 (G).

In all, 83 herbarium specimens, including type material of all the names involved, and 9 mounted photographs have been examined by me.

Citations: MEXICO: Chiapas: Breedlove 7482 (Z), 7744 (Ac), 8877 (Ac); Breedlove & Raven 8187 (Ac); Ghiesbreght 634 (G, Pa); Hernandez Xolocotzi C.1444 (N); Linden 147 [Macbride photos 24671] (Br— isotype, Kr—photo of isotype, N—photo of isotype, N—photo of isotype); Little & Sharp 9967 (N); Matuda 122 (Mh, Mi, N, N), 1541 (Mh, Mi, N), 2068 (A, Mh, Mi, N, N, N), 5149 (Ld); Raven & Breedlove 19864 (Ac). Tabasco: Linden 141 (Br). GUATEMALA: Alta Verapaz: P. C. Standley 69097 (N); Türckheim 382 (Br, C, G, N—photo, Pa, Z—photo), 8441 (C, G, N—photo, Z—photo), II.715 [Feb. 1907; Herb. Hort. Then. I.6032] (Br, Br, G, It, N, N—photo, S, S, Z—photo), II.715 [Jan. 1908] (N). Chimaltenango: P. C. Standley 57922 (N), 64484 (N). El Quiché: Heyde & Lux 3024 (C, G). Guatemala: J. D. Smith 1888 (C, G, Pa); Williams & Molina R. 15289 (G). Huehuetenango: Skutch 1627 (A, N). Jalapa: P. C. Standley 77203 (N). Quezaltenango: P. C. Standley 85221 (N), 85790 (N), 86624 (N). Sacatepéquez: S. S. White 5271 (Mi); Williams & Molina R. 15407 (G). San Marcos: J. A. Steyermark 36471 (F—1035157). Santa Rosa: Heyde & Lux 4389 (C, G, Mi). Zacapa: J. A. Steyermark 42594 (N). Department undetermined: Hartweg 560 (Lu); Herb. Colo. A. & M. A. Coll. s.n. (Fc). BRITISH HONDURAS: D. R. Hunt 409 (W—2398853). HONDURAS: Comayagua: Molina R. 13631 (W—2445434); P. C. Standley 56168 (A); Williams & Molina R. 12560 (G). Copan: H. Pittier 1855 (N). El Paraiso: Molina R. 625 (G). Morazán: Molina R. 1733 (G); Standley & Molina R. 4197 (N); J. Valerio Rodríguez 3645 (G); Williams & Molina R. 11986 (A), 12250 (G), 23231 (Mi, N, S, W—2398191). EL SALVADOR: San Salvador: Calderón 476 (N); M. C. Carlson 380 (Ca—703791); P. C. Standley 22945 (G, N). NICARAGUA: Matagalpa: Williams, Molina R.,

& Williams 23910 (N).

LIPPIA SUFFRUTICOSA (Griseb.) Kuntze, Rev. Gen. Pl. 3 (2): 253. 1898.

Synonymy: Lippia geminata var. suffruticosa Griseb., Abh. K. Gesell. Wiss. Götting. 24: [Symb. Fl. Arg.] 278. 1879. Lippia subfruticosa (Gris.) D. K. ex Fradusco, Rev. Inst. Munic. Bot. Carlos Thays 2: 67, sphalm. 1962.

Bibliography: Griseb., Abh. K. Gesell. Wiss. Götting. 24: [Symb. Fl. Arg.] 278. 1879; Kuntze, Rev. Gen. Pl. 3 (2): 253. 1898; Thiselt.-Dyer, Ind. Kew. Suppl. 2: 106. 1904; Moldenke, Lilloa 5: 428--429. 1940; Moldenke, Suppl. List Invalid Names 5. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 43 & 96. 1942; Moldenke, Alph. List Invalid Names 30. 1942; Moldenke, Lilloa 8: 426 (1942) and 10: 343 & 380. 1944; Moldenke, Castanea 10: 42. 1945; Moldenke, Alph. List Cit. 1: 16, 84, & 92. 1946; Moldenke, Lilloa 12: 148 (1946) and 14: 46. 1948; Moldenke, Castanea 13: 118. 1948; Moldenke, Alph. List Cit. 2: 376, 378, 402, 427, & 442 (1948), 3: 661, 672, 673, 690, 804, 863, 864, & 913 (1949), and 4: 1079, 1088, 1089, & 1092. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 97, 105, & 191. 1949; Moldenke, Résumé 114, 126, 312, & 463. 1959; Fradusco, Rev. Inst. Munic. Bot. Carlos Thays 2: 67 & 69. 1962; Moldenke, Phytologia 12: 63, 100, 346, 433, & 434. 1965; Moldenke, Résumé Suppl. 12: 11. 1965.

Prostrate herb or shrub, 0.2--1 m. tall; leaves aromatic; corolla hypocrateriform, white or pink to bluish, blue-lilac, white-violet, clear-violet, or even dark-red.

The type of this species was collected by Paul Günther Lorentz and Georg Hans Emmo Wolfgang Hieronymus (no. 234) in Salta, Argentina, and was deposited in the herbarium of the Botanisches Museum in Berlin, where it was photographed by Macbride as his type photograph number 17550, but is now destroyed. The species has been found growing in fertile soil, fertile uncultivated soil, sandy or rocky dry soil, in fields, on railroad embankments, barrancas, and the tops of mountains, at altitudes of 70 to 2600 meters, flowering from November to June, fruiting in February. A vernacular name recorded for it is "salvia". The flowers are described as "white" on D. Rodriguez 1134 and A. G. Schulz 2884; "bluish" on Venturi 10323; "blue-lilac" on M. Cárdenas 3837; "pink" on Venturi 4294; "white-violet" on Venturi 2234; "clear-violet" on Venturi 354; and "dark-red" on M. Cárdenas 2470.

Material has been misidentified and distributed in herbaria under the names L. geminata H.B.K., L. pendula Rusby, and Lantana sp. On the other hand, the D. Rodriguez 234 and Herb. Inst. Miguel Lillo 32056, distributed as L. suffruticosa and so cited in Lilloa 10: 380 (1944), are actually L. recollectae Morong.

In all, 33 herbarium specimens, including type material of all the names involved, and 5 mounted photographs have been examined by me.

Citations: BOLIVIA: Cochabamba: M. Cárdenas 2470 (W--1877088),

3837 (N); Julio II.138 (W--1544263). ARGENTINA: Jujuy: Burkart & Troncoso 11099 (N); T. Meyer 16442 (N); O'Donell 4851 (N). Salta: Cabrera 3117 (N); Lillo 3842 [Herb. Inst. Miguel Lillo 32075] (N); Lorentz & Hieronymus 234 [Macbride photos 17550] (It--photo of type, Kr--photo of type, N--photo of type, N--photo of type, W--photo of type, W--281553--isotype), s.n. [San José, beginning of Feb. 1873] (S), s.n. [II.1873] (N); Pierotti 1082 (Ca); D. Rodriguez 1134 (La). Tucumán: Bailetti 238 [Herb. Inst. Miguel Lillo 32060] (N); Peirano s.n. [La Ramada, April 2, 1933; Herb. Inst. Miguel Lillo 32895] (N); A. G. Schulz 2884 (N); Venturi 354 [Herb. Inst. Miguel Lillo 32063; Herb. Osten 17247] (N, Ug, W--1591217), 1333 (W--1591239), 1789 [Herb. Inst. Miguel Lillo 32067] (Ca--3402, N, W--1591245), 2234 [Herb. Osten 17267] (Ug, W--1591248), 4294 (N, W--1591441), 10323 (E--986714, N, S), s.n. [Herb. Mus. Argent. Cienc. Nat. 23870] (N). LOCALITY OF COLLECTION UNDESIGNATED: Herb. Jard. Bot. Brux. s.n. (Br).

LIPPIA TAYACAJANA Moldenke, Phytologia 2: 21--22. 1941.

Bibliography: Moldenke, Phytologia 2: 21--22. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 35 & 96 (1942) and [ed. 2], 73 & 191. 1949; Moldenke, Alph. List Cit. 4: 1067, 1113, & 1167. 1949; E. J. Salisb., Ind. Kew. Suppl. 11: 138. 1953; Moldenke, Résumé 84 & 463. 1959; Moldenke, Résumé Suppl. 7: 4. 1963.

BOOK REVIEWS

Alma L. Moldenke

"Manual of Cane-growing", by N. J. King, R. W. Mungomery, & C. G. Hughes, revised edition, 375 pp., illustr. American Elsevier Publishing Company, Inc., New York, N. Y. 1965. \$11.00

Because I had seen well used copies of the earlier edition of this work in the hands of agricultural scientists from Cuba and Argentina, and in Hawaii, and because of my personal ignorance of the authors & their research work, it came as a great surprise to learn that this careful and newly updated work originated mainly in the famous Sugar Experiment Stations "down under" in Queensland.

For the experienced scientist, as well as the novice in cane agriculture, all aspects of the industry -- the plant, its soil relations, its breeding, and its enemies in the form of pests and diseases -- are carefully considered. The nature and results of modern research are well covered. The book is effectively illustrated.